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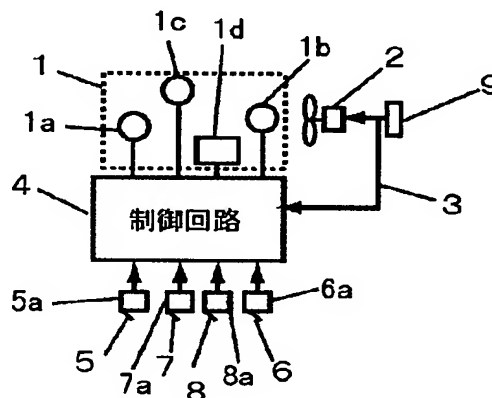
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(54) 【発明の名称】 加熱調理器と換気扇の連動装置

## (57) 【要約】

【課題】 加熱調理の実態に即した換気と使い勝手を向上させる加熱調理器と換気扇の連動装置を提供する。

【解決手段】 換気扇 2 を加熱調理器 1 の加熱調理に連動運転させ、かつ加熱調理器の使用状況に応じて換気扇の風量を選択する制御回路 4 と、前記連動運転中に風量切替や停止を行う換気扇操作スイッチ 9 を備え、制御回路は換気扇の連動運転中に風量の切替を行った場合は、加熱調理器の再使用の際に風量切替後の風量の新連動運転時の風量としたものである。従って、加熱調理器の使用状況に応じて適切な換気ができ、かつ換気扇の連動運転中であっても自由に風量切替や停止ができ、更に連動運転中に風量切替を行った時には、風量切替後の風量の新連動運転時の風量になる。



1 加熱調理器

2 換気扇

4 制御回路

5 左コンロ用操作鈕

6 右コンロ用操作鈕

7 奥コンロ用操作鈕

8 グリル用操作鈕

5a~8a 換気扇連動スイッチ

9 換気扇操作スイッチ

## 【特許請求の範囲】

【請求項 1】加熱調理手段と、加熱調理時の換気を行う換気扇と、この換気扇を前記加熱調理手段の加熱調理に連動運転させ、かつ加熱調理手段の使用状態に応じて前記換気扇の風量を選択する制御手段と、前記換気扇の連動運転中における風量切換や停止を行う換気扇操作手段を備え、前記制御手段は換気扇の連動運転中に風量の切換を行った場合は、加熱調理手段の再使用の際に前記風量切換後の風量を新連動運転時の風量として連動運転する構成にした加熱調理器と換気扇の連動装置。

【請求項 2】制御手段は、加熱調理手段の使用終了後の所定時間経過後は換気扇の新連動運転時の風量を解消し、前記加熱調理手段の使用状態に応じて選択した風量で換気扇を連動運転する請求項 1 に記載の加熱調理器と換気扇の連動装置。

【請求項 3】加熱調理手段と、加熱調理時の換気を行う換気扇と、この換気扇を前記加熱調理手段の加熱調理に連動運転させ、かつ加熱調理手段の使用状態に応じて前記換気扇の風量を選択する制御手段と、前記換気扇の連動運転中における風量切換や停止を行う換気扇操作手段を備え、前記制御手段は換気扇の連動運転中に風量の切換を行った場合は、加熱調理手段の再使用の際に使用頻度の多い風量切換後の風量を新連動運転時の風量として連動運転する構成にした加熱調理器と換気扇の連動装置。

【請求項 4】制御手段は、加熱調理手段の使用終了後の所定時間経過後は換気扇の新連動運転時の風量を解消し、前記加熱調理手段の使用状態に応じて選択した風量で換気扇を連動運転する請求項 3 に記載の加熱調理器と換気扇の連動装置。

【請求項 5】加熱調理手段と、加熱調理時の換気を行う換気扇と、この換気扇を前記加熱調理手段の加熱調理に連動運転させ、かつ加熱調理手段の使用状態に応じて前記換気扇の風量を選択するとともに手元照明灯を点灯させる制御手段と、前記換気扇の風量切換や停止および前記手元照明灯の消灯を行う換気扇操作手段を備えた加熱調理器と換気扇の連動装置。

【請求項 6】加熱調理手段の加熱力を調節する加熱力調節手段を備え、制御手段は換気扇の連動運転中に加熱力を調節した後、所定時間経過すると手元照明灯を消灯する構成にした請求項 5 に記載の加熱調理器と換気扇の連動装置。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】本発明は、ガス燃焼または電気を熱源として加熱調理した際に発生する排ガス、臭気、熱気等を、加熱調理に連動した換気扇で換気する加熱調理器と換気扇の連動装置に関するものである。

## 【0002】

【従来の技術】従来の加熱調理器と換気扇の連動装置

は、加熱調理時の前後における換気扇の運転と停止の忘れ防止を図るのが主なものであった。従って、加熱調理器を使用すると換気扇は連動運転を行い、一定の換気風量で加熱調理時に発生する油煙、臭気、熱気等を室外に排出し、部屋の換気を行うものであった。

## 【0003】

【発明が解決しようとする課題】しかしながら、上記従来の加熱調理器と換気扇の連動装置では、換気扇の換気風量が一定なため、加熱調理器の加熱状況に応じての実態に即した換気ができなかった。すなわち、加熱調理器における加熱コンロの使用口数を 1 個から 2 個に増やして同時に加熱調理を行った際に増加した油煙や臭気、熱気を十分に換気できなかったり、或いは換気扇の一定の換気風量が大きすぎると、必要以上に換気を行い部屋の温度を下げすぎたり、運転音が騒音になる等の課題を有していた。

【0004】また、換気扇は加熱調理器と連動運転中、風量切換や停止を行うことができないため、加熱調理器の使用状況に応じた自由な使い方ができず不便である等の課題も有していた。

【0005】本発明は、上記従来の課題を解決するもので加熱調理器の使用状況に応じて換気扇を加熱調理器と合理的に連動運転できるようにした加熱調理器と換気扇の連動装置を提供するものである。

## 【0006】

【課題を解決するための手段】本発明は、上記従来の課題を解決するために、加熱調理手段と、加熱調理時の換気を行う換気扇と、この換気扇を前記加熱調理手段の加熱調理に連動運転させ、かつ加熱調理手段の使用状態に応じて前記換気扇の風量を選択する制御手段と、前記換気扇の連動運転中における風量切換や停止を行う換気扇操作手段を備え、前記制御手段は換気扇の連動運転中に風量の切換を行った場合は、加熱調理手段の再使用の際に前記風量切換後の風量を新連動運転時の風量として連動運転する構成にした加熱調理器と換気扇の連動装置である。

【0007】上記手段によれば、調理の実態に即して加熱調理手段の使用状態に応じた換気風量が得られ適切な換気ができるとともに、常に連動運転時における換気扇の風量の切換や停止もでき室温が高低しすぎたり、換気騒音を小さくしたい時の風量の切換調節等もでき、更に換気扇の連動運転中に風量の切換を行った後の風量を新連動運転時の風量として連動運転し、再び加熱調理の際に使用状況に即した換気扇の運転になり使い勝手が向上する。

## 【0008】

【発明の実施の形態】本発明の請求項 1 に記載の加熱調理器と換気扇の連動装置は、加熱調理手段と、加熱調理時の換気を行う換気扇と、この換気扇を前記加熱調理手段の加熱調理に連動運転させ、かつ加熱調理手段の使用

状態に応じて前記換気扇の風量を選択する制御手段と、前記換気扇の連動運転中における風量切替や停止を行う換気扇操作手段を備え、前記制御手段は換気扇の連動運転中に風量の切替を行った場合は、加熱調理手段の再使用の際に前記風量切替後の風量を新連動運転時の風量として連動運転する構成にしたものである。

【0009】上記実施形態において、制御手段により加熱調理手段の使用状態、例えばガスコンロの使用口数の組み合わせ毎に加熱量から算出された必要換気風量を基にして連動運転時の風量を「弱」或いは「強」に設定することで、2個の口数を同時に使って加熱調理した際の多量の油煙や臭気、熱気の換気には換気扇を「強」運転、1個の口数での加熱調理時には「弱」運転として加熱調理の実態に即して部屋の換気を行える。

【0010】また、一方では換気扇操作手段により、いつでも連動運転時の「強」「弱」の切替や停止ができることになり、室温が高すぎたり、低すぎたりした時や騒音を小さくしたい時の換気風量の切替調節が使用環境に応じて自由に行える。

【0011】更に制御手段により換気扇の連動運転中に風量の切替を行った後の風量を新連動運転時の風量として連動運転するようにしているため、再び加熱調理の際に使用状況に即した換気扇の運転にできる。

【0012】本発明の請求項2に記載の加熱調理器と換気扇の連動装置は、請求項1に記載において、制御手段は加熱調理手段の使用終了後の所定時間経過後は換気扇の新連動運転時の風量を解消し、前記加熱調理手段の使用状態に応じて選択した風量で換気扇を連動運転するものである。

【0013】上記実施形態において、上記した請求項1に記載の加熱調理器と換気扇の連動装置と同じ作用が得られるとともに、更に制御手段により加熱調理手段の使用終了後の所定時間以内は前回使用時の風量で、すなわち新連動運転時の風量で運転を行うことで、その使用状態における最適な風量で換気扇を運転でき、所定時間経過後は予め定めた風量に戻すことで、前回の使用状態に関わらない標準的な設定の風量で換気扇を運転できることになる。

【0014】本発明の請求項3に記載の加熱調理器と換気扇の連動装置は、加熱調理手段と、加熱調理時の換気を行う換気扇と、この換気扇を前記加熱調理手段の加熱調理に連動運転させ、かつ加熱調理手段の使用状態に応じて前記換気扇の風量を選択する制御手段と、前記換気扇の連動運転中における風量切替や停止を行う換気扇操作手段を備え、前記制御手段は換気扇の連動運転中に風量の切替を行った場合は、加熱調理手段の再使用の際に使用頻度の多い風量切替後の風量を新連動運転時の風量として連動運転する構成にしたものである。

【0015】上記実施形態において、制御手段により加熱調理手段の使用状態、例えばガスコンロの使用口数の

組み合わせ毎に加熱量から算出された必要換気風量を基にして連動運転時の風量を「弱」或いは「強」に設定することで、2個の口数を同時に使って加熱調理した際の多量の油煙や臭気、熱気の換気には換気扇を「強」運転、1個の口数での加熱調理時には「弱」運転として加熱調理の実態に即して部屋の換気を行える。

【0016】また、一方では換気扇操作手段により、いつでも連動運転時の「強」「弱」の切替や停止ができることになり、室温が高低しすぎたり、騒音を小さくしたい時の換気風量の切替調節が使用環境に応じて自由に行える。

【0017】更に制御手段により、換気扇の連動運転中に風量切替を行った場合に、使用頻度の多い切替後の風量を新連動運転時の風量として連動運転するため、再び加熱調理の使用の際に調理のパターン等の使用環境に応じて使用者がよく使う運転モードになるのである。

【0018】本発明の請求項4に記載の加熱調理器と換気扇の連動装置は、請求項3に記載において、制御手段は加熱調理手段の使用終了後の所定時間経過後は換気扇の新連動運転時の風量を解消し、前記加熱調理手段の使用状態に応じて選択した風量で換気扇を連動運転するものである。

【0019】上記実施形態において、上記した請求項3に記載の加熱調理器と換気扇の連動装置と同じ作用が得られるとともに、更に制御手段により加熱調理手段の使用終了後の所定時間を経過した後は予め定めた風量に戻すことで前回の使用状態に関わらない標準的な設定の風量で換気扇を運転できることになる。

【0020】本発明の請求項5に記載の加熱調理器と換気扇の連動装置は、加熱調理手段と、加熱調理時の換気を行う換気扇と、この換気扇を前記加熱調理手段の加熱調理に連動運転させ、かつ加熱調理手段の使用状態に応じて前記換気扇の風量を選択するとともに手元照明灯を点灯させる制御手段と、前記換気扇の風量切替や停止および前記手元照明灯の消灯を行う換気扇操作手段を備えたものである。

【0021】上記実施形態において、制御手段により加熱調理手段の使用状態に応じ、連動運転する換気扇の風量を選択できるとともに、換気扇の手元照明灯を自動的に点灯させるものである。また、換気扇操作手段により、使用者は独自に手元照明灯の消灯を行えるものである。

【0022】本発明の請求項6に記載の加熱調理器と換気扇の連動装置は、請求項5に記載において、加熱調理手段の加熱力を調節する加熱力調節手段を備え、制御手段は換気扇の連動運転中に加熱力を調節した後、所定時間経過すると手元照明ランプを消灯する構成にしたものである。

【0023】上記実施形態において、上記した請求項5に記載の加熱調理器と換気扇の連動装置と同じ作用が得

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られるとともに、更に制御手段により加熱力を調節した後、所定時間経過しても加熱力の調節がない場合、例えば長時間の煮込み調理等で手元照明が不要な時には手元照明灯を自動的に消灯させるのである。

【0024】

【実施例】以下本発明の加熱調理器と換気扇の連動装置の一実施例につき、図1～図10を用いて説明する。

【0025】（実施例1）図1は請求項1の発明に対応する一実施例におけるガス燃焼調理器と換気扇を電氣的に接続した状態の連動装置を示す要部斜視図、図2は同連動装置の制御回路を示すブロック図、図3は同連動装置の連動運転の制御を示す概略フローチャート、図9は同連動装置における燃焼調理器の使用口数に応じた連動運転時の風量を記憶している制御手段の設定メモリを示す図ある。

【0026】1は加熱調理手段としてガス燃焼を熱源とする加熱調理器で、左コンロ1a、右コンロ1b、奥コンロ1c、そして内部のグリル1dを有する。2は換気扇で、加熱調理器1で加熱調理した際に発生する油煙や臭気、熱気、燃焼排ガス等を室外に排出し換気するため、加熱調理器1の上方に配置している。3は換気扇連動接続線で、壁の内部に配線して加熱調理器1の制御手段としての制御回路4と換気扇2を電氣的に接続している。5は左コンロ用操作釦で、6は右コンロ用操作釦で、7は奥コンロ用操作釦で、8はグリル用操作釦で、各々が各コンロ1a～1cおよびグリル1dの点火および消火を行うとともに、換気扇連動スイッチ5a、6a、7a、8aを内蔵している。そして、この各操作釦5～8は操作をすると対応する各コンロ1a～1cおよびグリル1dが点火され、更に対応する換気扇連動スイッチ5a、6a、7a、8aが点火状態を認識し、その信号が加熱調理器1の本体内の制御回路4へ送られる。前記制御回路4は受信した信号を判定して連動運転の出力信号を換気扇連動接続線3により換気扇2へ送信し、換気扇2を連動運転させる。そして、各コンロ1a～1cおよびグリル1dの消火は、前記した点火と同様に各操作釦5～8を操作して行うものである。前記制御回路4は制御部、演算部、記憶部を有するマイクロコンピュータ等からなり、加熱調理器1の使用状態（コンロの加熱に使用している口数）に応じて前記換気扇2の換気風量を選択できるように図9に示す設定メモリのテーブルを記憶部に有するとともに、換気扇2の連動運転中に風量の切換を行った場合は、加熱調理器1の再使用の際に前記風量切換後の風量を新連動運転時の風量として記憶し連動運転する構成とし、更に後述する換気扇操作スイッチからの信号を優先的に判断するように構成している。9は換気扇操作手段としての換気扇操作スイッチで、手動で操作し、換気扇2の運転および停止や風量の切換を行うものである。

【0027】上記構成において、図3の制御フローに従

い制御回路4による換気扇2の連動運転の制御を説明する。S1（Sをステップと呼び、以下同様に表す）で使用コンロの口数、グリルとその組み合わせのチェックを行う。S2ではその使用コンロ、グリルにより図9に示す設定メモリから、換気扇2の運転連動時の風量を読み出す。S3ではS2で読み出した風量設定に従い換気扇2を運転する。S4では換気扇操作スイッチ9による風量切換の指示をチェックし、切換の指示が無ければS6に進み、切換の指示があればS5へ進む。そして、S5では風量切換の指示に従い、その風量を風量切換後の風量として記憶する。これは加熱調理が終了し、換気扇2の運転を終了した後も継続して記憶し、再び加熱調理する際の換気扇2の運転時にS2で読み出されるものである。

【0028】例えば、加熱調理器1の右コンロ1bを使用した場合、S1で使用コンロを右コンロ1bとチェックした後、S2では図9のメモリ番号3を読み出し、S3で換気扇2を「弱」風量で運転する。S4で換気扇操作スイッチ9による風量変更の指示をチェックし、指示が無ければS6へ飛び、指示があればS5の処理に移る。その際、換気扇操作スイッチ9で「強」風量の指示があればS5では図9のメモリ番号3のように「弱」を「強」風量に書き換え新連動運転時の風量として記憶する。次にS6で燃焼継続中のチェック、すなわち右コンロ用操作釦6による消火の指示が無いかをチェックし、燃焼を継続するのであればS1へ戻り、継続しない場合はS7へ移行し、右コンロ用操作釦6による消火の処理と換気扇2の停止が行われる。

【0029】以上のように本実施例で制御回路4は、各操作釦5～8の各々の操作をすると対応する各コンロ1a～1cおよびグリル1dが点火され、更に対応する換気扇連動スイッチ5a、6a、7a、8aからの信号で加熱調理器1の使用状況を判断して換気扇2の連動運転時の風量を選択し設定する構成としているので、加熱調理の実態に即した部屋の換気を行うことができる。すなわち、加熱調理器の使用口数に応じて換気扇2の連動風量を「弱」または「強」に設定することにより、複数のコンロを同時に使用した調理の際に多量の煙や臭気、熱気の換気には「強」の運転、1口のコンロでの調理には「弱」の運転というように、調理の実態に即して部屋の換気を適切に行うことができる。

【0030】また、制御回路4は換気扇操作スイッチ9からの信号を優先的に判断する構成にしているので、連動運転、非連動運転時を問わず換気扇2の運転および停止や風量の切換が可能になり使用環境に応じた自由な使い方ができる。

【0031】更に、制御回路4はS5で書き換えた風量のメモリを、次に書き換えの指示があるまでは保持するので、使用するコンロと風量の組み合わせを記憶し、次のコンロ使用時にその風量で換気扇2の運転を行い、そ

の都度風量を変更する手間が省ける便利さを有する。

【0032】(実施例2)図4は請求項2に対応する発明の一実施例における燃焼調理器と換気扇の連動装置の概略フローチャートである。この発明は、制御手段としての制御回路が実施例1の制御回路4と一部が異なるだけで、これ以外の同一構成、作用効果を奏する部分には同じ符号を付して詳細な説明を省略し、図2を参照して異なる処を中心に説明する。

【0033】この発明における制御回路4は、実施例1の制御手段4の構成に加えて、更に加熱調理器1の使用終了後の所定時間を経過した後は、換気扇2の連動運転中に風量の切換を行った場合における加熱調理器1の再使用の際に前記風量切換後の風量を新連動運転時の風量としていたものを解消し、前記加熱調理器1の使用状態に応じて選択した風量で換気扇2を連動運転する構成としたものである。

【0034】上記構成において、図4の制御フローに従い制御回路4による換気扇2の連動運転の制御を説明する。S1からS7までの制御フローは実施例1と同一であり、そして、S7で操作釦による加熱調理中のコンロの消火処理と換気扇2の停止が行われると、S8では時間経過をカウントするタイマをスタートする。S9では前記タイマの時間を判断する処理で、所定時間を経過すればS10へ移行する。S10ではS5で記憶した新連動運転時の換気扇2の風量を解消し、図9に示す連動運転時の風量に書き換える処理である。つまり、S8でスタートするタイマにより加熱調理器1の使用終了後の経過時間をカウントし、1時間が経過すればその使用条件が変わったと判断して、コンロの使用口数に応じて予め定めた連動運転の風量で換気扇2を運転する。

【0035】以上のように本実施例では、実施例1の作用に加えて、タイマによりカウントする時間経過を、加熱調理器1の使用終了後の1時間程度に設定すれば朝、昼、夜の各加熱調理時間内(一般に1時間程度)では再使用時に前回使用時の風量で換気扇2の連動運転をさせることができ便利である。また、一定時間の経過後、すなわちコンロの使用条件が変わった場合は加熱調理器1の使用口数に応じて予め決めた必要換気量で換気扇2を運転でき適切な換気の確保が可能になる。

【0036】(実施例3)図5は請求項3に対応する発明の一実施例における燃焼調理器と換気扇の連動装置の概略フローチャートである。この発明は、制御手段としての制御回路4が実施例1の制御回路4と一部が異なるだけで、これ以外の同一構成、作用効果を奏する部分には同じ符号を付して詳細な説明を省略し、図2を参照して異なる処を中心に説明する。

【0037】この発明における制御回路4は、実施例1の制御回路4と同じように加熱調理器1の使用状態(コンロの加熱調理に使用している口数)に応じて前記換気扇2の換気風量を選択できるように図10に示す設定メ

モリのテーブルを記憶部に有するとともに、換気扇操作スイッチ9からの信号を優先的に判断するように構成している。更に制御回路4は、換気扇2の連動運転中に風量の切換を行った場合は、加熱調理器1の再使用の際に使用頻度の多い風量切換後の風量を新連動運転時の風量として連動運転する構成にしたものである。

【0038】上記構成において、図5の制御フローに従い制御回路4による換気扇2の連動運転の制御を説明する。S1で使用コンロの口数、グリルとその組み合わせのチェックを行う。S2ではその使用コンロ、グリルにより図10に示す設定メモリから、換気扇2の連動運転時の風量を読み出す。S3ではS2で読み出した風量設定に従い換気扇2を運転する。

【0039】S4では換気扇操作スイッチ9による風量切換の指示をチェックし、切換の指示が無ければS6に進み、切換の指示があればS4aへ進む。そして、S4aでは風量切換の指示に従い、図10の設定メモリの中における履歴メモリの1にその風量を風量切換後の風量として記憶し、S4bでその風量で換気扇2を連動運転する。次にS6で燃焼継続中のチェック、すなわち、各操作釦5〜7による消火の指示が無いかをチェックし、燃焼を継続するのであればS1へ戻り、継続しない場合は操作釦による消火の処理と判断をすると、S6aで図10における設定メモリの履歴メモリ1の「強」を新連動運転時の風量として設定して記憶する。そして、2回目に右コンロ1bを使用中、S4で換気扇操作スイッチ9により「弱」風量に切換の指示があると、S4aで図10における設定メモリの中の履歴メモリの2に「弱」が記憶される。そして、S4bでは「弱」風量で換気扇2を連動運転する。

【0040】次にS6で燃焼継続中をチェックし、すなわち、操作釦6による消火の指示が無いかをチェックし、操作釦による消火の処理を判断するとS4bでは図10における設定メモリの中の履歴メモリの中で「強」と「弱」が同数であるから新連動運転時の風量として「強」の記憶を保持する。本実施例では同数の場合に風量の大きい設定としたが、「強」「弱」いずれの設定も可能である。

【0041】更に3回目以降は風量切換の指示がある度に上記した制御フローが繰り返され、図10における設定メモリの中の履歴メモリに風量が蓄積、記憶される。この履歴メモリの個数は記憶素子の制約の範囲内で任意に設定する。設定したメモリの個数以上の回数、つまり風量の切換の指示がある場合は古い記憶から消去する等の処理が可能である。S6aでは履歴メモリに蓄積、記憶した風量の中から使用頻度の多い風量を新連動運転時の風量として設定し記憶する。図10の設定メモリに示す例では以後、3回目の使用時に「強」風量を記憶し、新連動運転時の風量として「強」風量が設定されている。



【0042】以上のように本実施例では、実施例1における制御回路4の一部の作用に加えて、換気扇2の連動運転中に風量切換を行った場合は、加熱調理器1の再使用の際にS6aで使用頻度の多い風量切換後の風量を新連動運転時の風量として採用するので、再使用の際に加熱調理のパターン等使用環境に応じて使用者がよく使う運転モードになり、更に使い勝手を向上させることができる。

【0043】（実施例4）図6は請求項4に対応する発明の一実施例における燃焼調理器と換気扇の連動装置の概略フローチャートである。この発明は、制御手段としての制御回路が実施例3の制御回路4と一部が異なるだけで、これ以外の同一構成、作用効果を奏する部分には同じ符号を付して詳細な説明を省略し、図2を参照して異なる処を中心に説明する。

【0044】この発明における制御回路4は、実施例3の制御回路4と同じように加熱調理器1の使用状態（コンロの加熱調理に使用している口数）に応じて前記換気扇2の換気風量を選択できるように図10に示す設定メモリのテーブルを記憶部に有するとともに、換気扇操作スイッチ9からの信号を優先的に判断するように構成している。

【0045】更に制御手段は、換気扇2の連動運転中に風量の切換を行った場合は、加熱調理器1の再使用の際に使用頻度の多い風量切換後の風量を新連動運転時の風量として連動運転する構成とし、そして加熱調理器1の使用終了後の所定時間を経過した後は、換気扇2の連動運転中に風量の切換を行った場合における加熱調理器1の再使用の際に前記風量切換後の風量を新連動運転時の風量としていたものを解消し、前記加熱調理器1の使用状態に応じて選択した風量で換気扇2を連動運転する構成にしたものである。

【0046】上記構成において、図6の制御フローに従い制御回路4による換気扇2の連動運転の制御を説明する。S1～S7までの制御フローは図5に示す実施例3における制御フローと同一である。

【0047】そして、S7で操作釦による加熱調理中のコンロの消火処理と換気扇2の停止が行われると、S8では時間経過をカウントするタイマをスタートする。S9では前記タイマの時間を判断する処理で、所定時間を経過すればS10へ移行する。S10ではS6aで記憶した新連動運転時の換気扇2の風量を解消し、図10に示す連動運転時の風量に書き換える処理である。つまり、S8でスタートするタイマにより加熱調理器1の使用終了後の経過時間をカウントし、1時間が経過すればその使用条件が変わったと判断して、コンロの使用口数に応じて予め定めた連動運転の風量で換気扇2を運転する。

【0048】以上のように本実施例では、実施例3における制御回路4の作用に加えて、換気扇2の連動運転中

に風量切換を行った場合は、加熱調理器1の再使用の際にS6aで使用頻度の多い風量切換後の風量を新連動運転時の風量として採用するので、加熱調理の終了後の所定時間内、すなわち使用条件が変わらない時間内は、再使用の際に加熱調理のパターン等使用環境に応じて使用者がよく使う運転モードになり、更に使い勝手を向上させることができる。

【0049】また、加熱調理器1の使用終了後の所定時間を経過した後、すなわち使用条件が変わった場合は、換気扇2の連動運転中に風量の切換を行った場合、加熱調理器1の再使用の際に前記風量切換後の風量を新連動運転時の風量としていたものを解消し、前記加熱調理器1の使用状態に応じて予め選択した風量で換気扇2を連動運転し適切な換気をすることができる。

【0050】（実施例5）図7は請求項5に対応する発明の一実施例における燃焼調理器と換気扇の連動装置の概略フローチャートである。この発明は、制御手段としての制御回路が実施例1の制御回路4と一部が、そして換気扇操作スイッチが異なるだけで、これ以外の同一構成、作用効果を奏する部分には同じ符号を付して詳細な説明を省略し、図2を参照して異なる処を中心に説明する。

【0051】この発明における制御回路4は、実施例1の制御回路4の構成に加えて、加熱調理器1の加熱調理に連動した換気扇2の運転後に、図1に示す手元照明灯10を点灯させ、かつ前記加熱調理器1の消火処理に連動して手元照明灯10を消灯するように構成したものである。換気扇操作スイッチ9は、換気扇2の風量切換や停止だけでなく、更に手元照明灯10の消灯を行うこともできるものである。

【0052】上記構成において、図7の制御フローに従い制御回路4による換気扇2の連動運転の制御を説明する。S1で使用コンロの口数、グリルとその組み合わせのチェックを行う。S2ではその使用コンロ、グリルにより図9に示す設定メモリから、換気扇2の連動運転時の風量を読み出す。S3ではS2で読み出した風量設定に従い換気扇2を加熱調理器1の加熱調理に連動運転させる。そして、S3aでは換気扇2の連動運転後、手元照明灯10を点灯させる。S4では換気扇操作スイッチ9による風量切換の指示をチェックし、切換の指示が無ければS6に進み、切換の指示があればS5へ進む。そして、S5では風量切換の指示に従い、その風量を風量切換後の風量として記憶する。これは加熱調理が終了し、換気扇2の運転を終了した後も継続して記憶し、再び加熱調理する際の換気扇2の運転時にS2で読み出されるものである。S6で燃焼継続中のチェック、すなわちコンロ用の各操作釦による消火の指示が無いかをチェックし、燃焼を継続するのであればS1へ戻り、継続しない場合はS7aへ移行し、コンロ用操作釦による消火の処理と換気扇2の停止、そして手元照明灯10の消灯

が行われる。

【0053】以上のように本実施例では、制御手段により加熱調理に連動して換気扇2の連動運転はもちろん、手元照明灯10も点灯するので、手元が明るくなって加熱調理がし易いだけでなく、手動による点灯と消灯の操作が不要になり、大変使い勝手をよくできる。また、手元照明灯10を制御回路4による制御とは別に換気扇操作スイッチ9で消灯もでき、使い勝手がよくなる。

【0054】

【実施例6】図8は請求項6に対応する発明の一実施例における燃焼調理器と換気扇の連動装置の概略フローチャートである。この発明は、制御手段としての制御回路が図7に示す実施例5の制御回路4と一部が異なるだけで、これ以外の同一構成、作用効果を奏する部分には同じ符号を付して詳細な説明を省略し、図2を参照して異なる処を中心に説明する。

【0055】11は図1に示すように各コンロ用操作釦5～8に対応して設けたガス流量制御手段（図示せず）を操作する火力調節釦で、各コンロ用操作釦5～8を操作して点火した後、加熱調理の内容に合わせて各コンロに供給するガス流量を制御して火力の調節を行うガス流量制御手段の釦である。また、制御手段としての制御回路4は、実施例5における制御回路4の構成に加えて、換気扇2の連動運転中に火力を調節した後、所定時間経過すると手元照明灯を消灯する構成にしたものである。

【0056】上記構成において、図8の制御フローに従い制御回路4による換気扇2の連動運転の制御を説明する。S1aでタイマを起動する。S1で使用コンロの口数、グリルとその組み合わせのチェックを行う。S2ではその使用コンロ、グリルにより図9に示す設定メモリから、換気扇2の連動運転時の風量を読み出す。S3ではS2で読み出した風量設定に従い換気扇2を加熱調理器1の加熱調理に連動運転させる。

【0057】そして、S3aでは換気扇2の連動運転後、手元照明灯10を点灯させる。S4では換気扇操作スイッチ9による風量切換の指示をチェックし、切換の指示が無ければS5aに進み、切換の指示があればS5へ進む。そして、S5では風量切換の指示に従い、その風量を風量切換後の風量として記憶する。これは加熱調理が終了し、換気扇2の運転を終了した後でも継続して記憶し、再び加熱調理する際の換気扇2の運転時にS2で読み出されるものである。

【0058】S5aで火力調節釦11の操作による火力調節があったかどうかチェックする。火力調節があればS5bに進み、S1aで起動したタイマをリセットし、火力調節がなければS5cに進む。S5cではタイマのカウントが10分経過した否かを判断し、経過していればS5dで手元照明灯10を消灯する。そして、前記10分を経過していなければS6に進む。

【0059】S6で燃焼継続中のチェック、すなわちコ

ンロ用の各操作釦による消火の指示が無いかをチェックし、燃焼を継続するのであればS1へ戻り、継続しない場合はS7aへ移行し、コンロ用操作釦による消火の処理と換気扇2の停止、そして手元照明灯10の消灯が行われる。

【0060】以上のように本実施例では、制御手段としての制御回路4により加熱調理に連動して換気扇2の連動運転はもちろん、手元照明灯10も点灯するので、手元が明るくなって加熱調理がし易いだけでなく、手動による点灯と消灯の操作が不要になり、大変使い勝手をよくできる。

【0061】また、加熱調理器の加熱中、常にタイマにより時間経過をカウントし、火力調節した後の経過時間を判定することにより、長時間に亘り火力調節しない、一定の火力で長時間調理する煮込み調理等の場合には手元照明灯10を消灯できるので、照明灯10の寿命を延ばすことができるとともに、省電力化を図ることができる。

【0062】なお、上記各実施例ではガス燃焼を熱源とする加熱調理器と換気扇の連動装置について説明をしたが、本発明は電気を加熱源とする加熱調理器における換気扇連動装置にも適用できるものである。そして、電気加熱源部を有する加熱調理器では上記実施例6における火力調節を、熱源部への電気の通電量を調節して加熱力を調節するものである。

【0063】

【発明の効果】以上の説明から明らかなように本発明の請求項1に記載の加熱調理器と換気扇の連動装置は、加熱調理手段と、加熱調理時の換気を行う換気扇と、この換気扇を前記加熱調理手段の加熱調理に連動運転させ、かつ加熱調理手段の使用状態に応じて前記換気扇の風量を選択する制御手段と、前記換気扇の連動運転中における風量切換や停止を行う換気扇操作手段を備え、前記制御手段は換気扇の連動運転中に風量の切換を行った場合は、加熱調理手段の再使用の際に前記風量切換後の風量を新連動運転時の風量として連動運転する構成にしたもので、加熱調理手段の使用状態により変えなければならない必要換気量、つまり加熱調理の実態に即して部屋の換気を適切に行うことができる。

【0064】また、常に連動運転時における換気扇の風量の切換や停止もでき室温が高低しすぎたり、換気騒音を小さくしたい時の風量の切換調節等、使用環境に応じた自由な換気もできる。

【0065】更に換気扇の連動運転中に風量の切換を行った後の風量を新連動運転時の風量として連動運転するようにしているため、再び加熱調理の際に使用状況に即した換気扇の運転になり使い勝手を向上できる。

【0066】本発明の請求項2に記載の加熱調理器と換気扇の連動装置は、請求項1に記載において、制御手段は加熱調理手段の使用終了後の所定時間経過後は換気扇

の新連動運転時の風量を解消し、前記加熱調理手段の使用状態に応じて選択した風量で換気扇を連動運転するもので、加熱調理手段の使用終了後の所定時間内は、再使用の際に使用状況に即した運転になり使い勝手を向上でき、更に加熱調理手段の使用終了後の所定時間を経過した後は、加熱調理手段の使用状態に応じて予め決めた風量で換気扇を運転でき適切な換気ができる。

【0067】本発明の請求項3に記載の加熱調理器と換気扇の連動装置は、加熱調理手段と、加熱調理時の換気を行う換気扇と、この換気扇を前記加熱調理手段の加熱調理に連動運転させ、かつ加熱調理手段の使用状態に応じて前記換気扇の風量を選択する制御手段と、前記換気扇の連動運転中における風量切換や停止を行う換気扇操作手段を備え、前記制御手段は換気扇の連動運転中に風量の切換を行った場合は、加熱調理手段の再使用の際に使用頻度の多い風量切換後の風量を新連動運転時の風量として連動運転する構成にしたもので、換気扇の連動運転中に風量切換を行った場合に、使用頻度の多い切換後の風量を新連動運転時の風量として連動運転するため、再び加熱調理の際に使用環境に応じて使用者がよく使う運転モードになり、更に使い勝手をよくすることができる。

【0068】また、加熱調理手段の使用状態、すなわち加熱調理の実態に即して部屋の換気も行うことができ、更には常に連動運転時における換気扇の風量の切換や停止もでき室温が高低しすぎたり、換気騒音を小さくしたい時の風量の切換調節等、使用環境に応じた自由な換気もできる。

【0069】本発明の請求項4に記載の加熱調理器と換気扇の連動装置は、請求項3に記載において、制御手段は加熱調理手段の使用終了後の所定時間経過後は換気扇の新連動運転時の風量を解消し、前記加熱調理手段の使用状態に応じて選択した風量で換気扇を連動運転するもので、加熱調理手段の使用終了後の所定時間内は、再使用の際に使用環境に応じて使用者がよく使う運転モードになり使い勝手を向上でき、更に加熱調理手段の使用終了後の所定時間を経過した後は前回の使用状態に関わらない、加熱調理手段の使用状態に応じて予め決めた風量で換気扇を運転でき適切な換気ができる。

【0070】本発明の請求項5に記載の加熱調理器と換気扇の連動装置は、加熱調理手段と、加熱調理時の換気を行う換気扇と、この換気扇を前記加熱調理手段の加熱調理に連動運転させ、かつ加熱調理手段の使用状態に応じて前記換気扇の風量を選択するとともに換気扇の手元照明灯を点灯させる制御手段と、前記換気扇の風量切換

や停止および前記手元照明灯の消灯を行う換気扇操作手段を備えたもので、加熱調理器の使用の度に手元照明灯を点灯する手間が省けて利便性が増すとともに、照明が不要な場合には消灯もでき、加熱調理の使用環境に応じた使い分けができ、一層便利にできる。

【0071】本発明の請求項6に記載の加熱調理器と換気扇の連動装置は、請求項5の記載において、加熱調理手段の加熱力を調節する加熱力調節手段を備え、制御手段は換気扇の連動運転中に加熱力を調節した後、所定時間経過すると手元照明灯を消灯する構成にしたもので、所定時間経過しても加熱力の調節がない場合、例えば長時間の煮込み調理等で手元照明が不要な時には手元照明灯を自動的に消灯でき、手元照明灯の寿命の延長と省電力を図ることができる。

【図面の簡単な説明】

【図1】本発明の実施例1～実施例6における換気扇連動装置を備えた燃焼調理器と換気扇を示す斜視図

【図2】同実施例1～実施例6における換気扇連動装置の全体の概略ブロック図

【図3】同実施例1における換気扇の連動運転の制御を示すフローチャート

【図4】同実施例2における換気扇の連動運転の制御を示すフローチャート

【図5】同実施例3における換気扇の連動運転の制御を示すフローチャート

【図6】同実施例4における換気扇の連動運転の制御を示すフローチャート

【図7】同実施例5における換気扇の連動運転の制御を示すフローチャート

【図8】同実施例6における換気扇の連動運転の制御を示すフローチャート

【図9】同実施例1における換気扇連動装置を備えた燃焼調理器のコンロ使用口数に応じた連動運転時における風量の設定メモリのテーブルを示す図

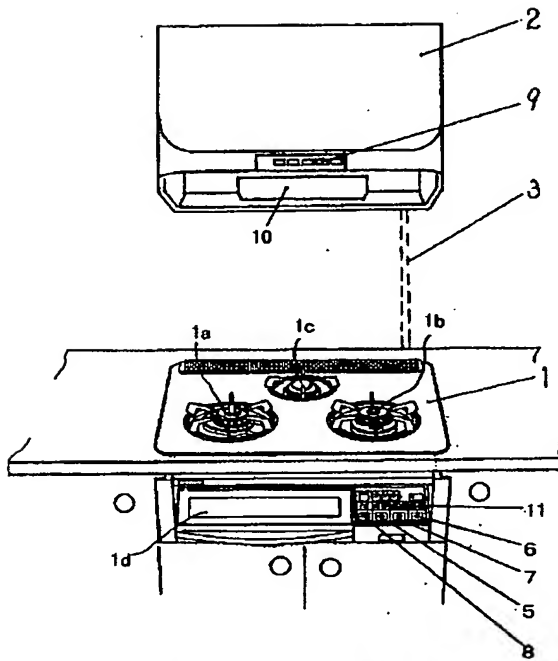
【図10】同実施例3における換気扇連動装置を備えた燃焼調理器のコンロ使用口数に応じた連動運転時における風量の設定メモリのテーブルを示す図

【符号の説明】

- 1 加熱調理器（加熱調理手段）
- 2 換気扇
- 4 制御回路（制御手段）
- 9 換気扇操作スイッチ（換気扇操作手段）
- 10 手元照明灯
- 11 火力調節鈕（加熱力調節手段）

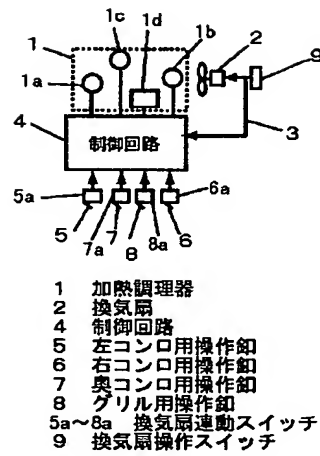


【図1】

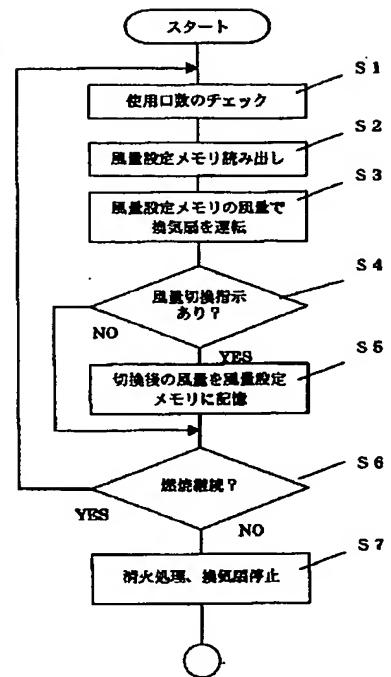


- 1 加熱調理器      9 換気扇操作スイッチ  
 2 換気扇      10 手元照明灯  
 3 換気扇連動接続線      11 火力調節弁  
 1a 左コンロ  
 1b 右コンロ  
 1c 奥コンロ  
 1d グリル

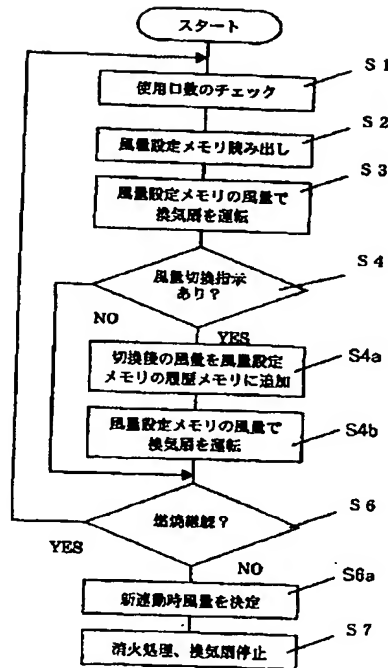
【図2】



【図3】



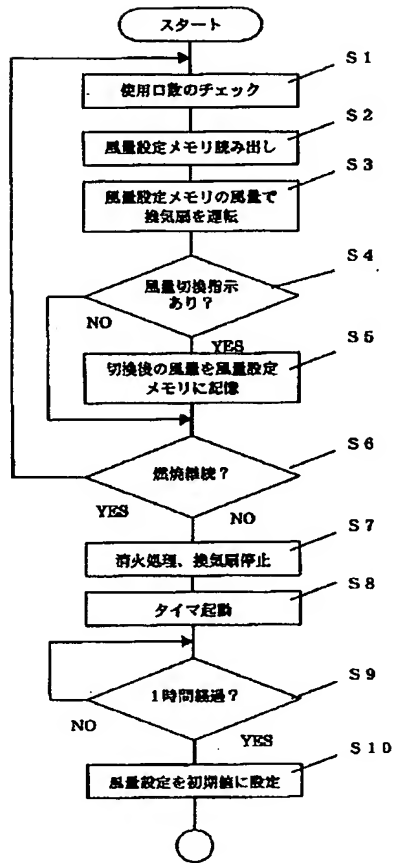
【図5】



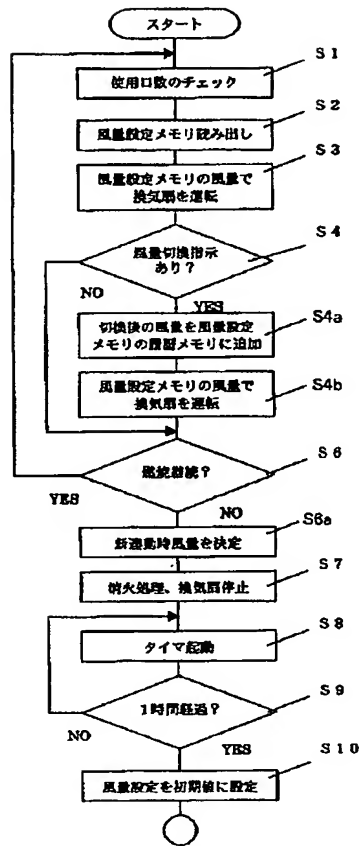
【図9】

メモリ番号	使用コンロの組み合わせ	連動時風量	新連動時風量
1	左コンロ	弱	
2	奥コンロ	弱	
3	右コンロ	弱	強
4	グリル	弱	
5	左+奥	弱	
6	左+グリル	弱	
7	奥+グリル	弱	
8	右+奥	強	
9	右+グリル	強	
10	左+右	強	
11	左+奥+グリル	強	
12	左+右+グリル	強	
13	左+奥+右	強	
14	奥+右+グリル	強	
15	左+奥+右+グリル	強	

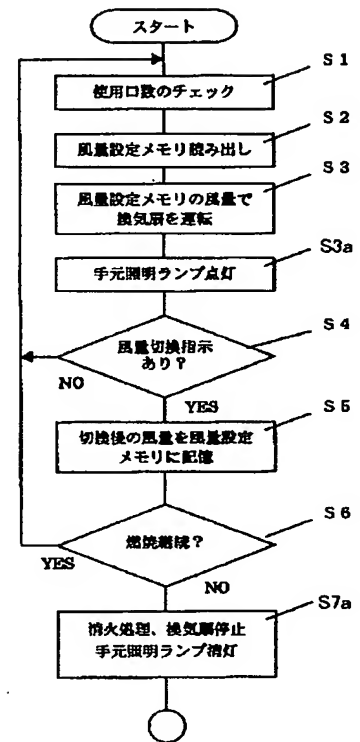
【図4】



【図6】



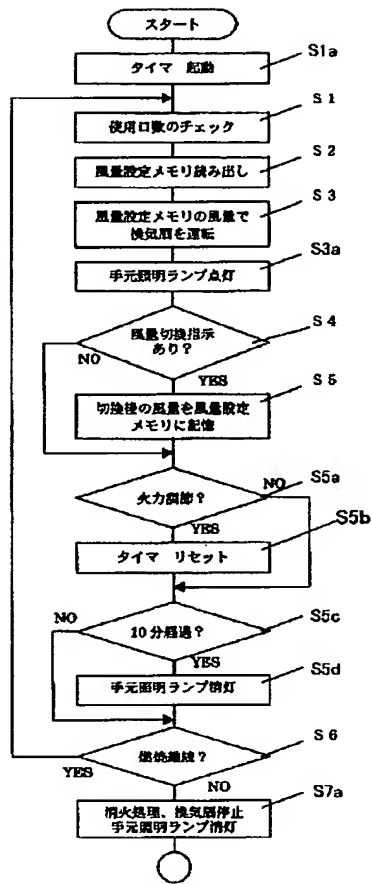
【図7】



【図10】

メモリ 番号	使用コンロの 組み合わせ	運転時 風量	履歴メモリ					新運転時 風量
			1	2	3	...	n	
1	左コンロ	弱						
2	奥コンロ	弱						
3	右コンロ	弱	強	弱	強			強
4	グリル	弱						
5	左+奥	弱						
6	左+グリル	弱						
7	奥+グリル	弱						
8	右+奥	強						
9	右+グリル	強						
10	左+右	強						
11	左+奥+グリル	強						
12	左+右+グリル	強						
13	左+奥+右	強						
14	奥+右+グリル	強						
15	左+奥+右+ グリル	強						

【図8】



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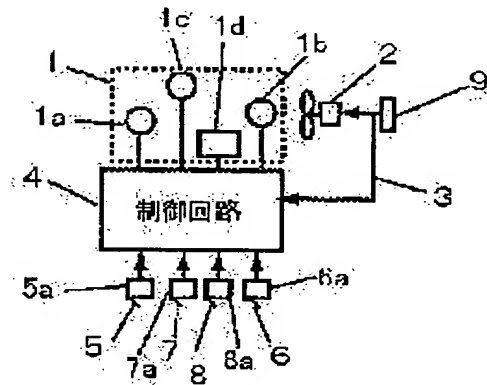
(72)Inventor : FURUICHI KOJI  
SENDA HIROYUKI

## (54) INTERLOCKING DEVICE OF COOKER AND AIR FAN

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide the interlocking device of a cooker for improving ventilation and ease of use suited for the actual condition of cooking, and an air fan.

**SOLUTION:** A control circuit 4 for operating an air fan 2 in linking with the heating of a cooker 1 and selecting the amount of wind of the air fan according to the usage condition of the cooker, and an air fan operation switch 9 for switching and stopping the amount of wind during the interlocking operation are provided. The control circuits sets the amount of wind after switching the amount of wind to the amount of wind in a new interlocking operation when the cooker is to be used again when the amount of wind is switched during the interlocking operation of the air fan, thus performing appropriate ventilation according to the usage condition of the cooker, freely switching the amount of wind or performing stopping even during the interlocking operation of the air fan, and further setting the amount of wind after switching the amount of wind to the amount of wind in a new interlocking operation when the amount of wind is switched during interlocking operation.



- 1 加熱調理器
- 2 換気扇
- 4 制御回路
- 5 左コンロ用操作鈕
- 6 右コンロ用操作鈕
- 7 奥コンロ用操作鈕
- 8 グリル用操作鈕
- 5a~8a 換気扇連動スイッチ
- 9 換気扇操作スイッチ

## LEGAL STATUS

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[Date of requesting appeal against examiner's decision of rejection]

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CLAIMS

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[Claim(s)]

[Claim 1] The control means which is made to carry out sequential operation of a heating cook stage, the ventilating fan which performs ventilation at the time of cooking, and this ventilating fan to cooking of said heating cook stage, and chooses the airflow of said ventilating fan according to the busy condition of a heating cook stage, When it has a ventilating-fan actuation means to perform the airflow change-over and halt under sequential operation of said ventilating fan and said control means switches airflow during the sequential operation of a ventilating fan The interlocking device of the heating cooking device made the configuration which carries out sequential operation of the airflow after said airflow change-over as airflow at the time of new sequential operation in the case of the reuse of a heating cook stage, and a ventilating fan.

[Claim 2] For after the predetermined time progress after use termination of a heating cook stage, a control means is an interlocking device of a heating cooking device and a ventilating fan according to claim 1 which carries out sequential operation of the ventilating fan with the airflow which canceled the airflow at the time of the new sequential operation of a ventilating fan, and was chosen according to the busy condition of said heating cook stage.

[Claim 3] The control means which is made to carry out sequential operation of a heating cook stage, the ventilating fan which performs ventilation at the time of cooking, and this ventilating fan to cooking of said heating cook stage, and chooses the airflow of said ventilating fan according to the busy condition of a heating cook stage, When it has a ventilating-fan actuation means to perform the airflow change-over and halt under sequential operation of said ventilating fan and said control means switches airflow during the sequential operation of a ventilating fan The interlocking device of the heating cooking device made the configuration which carries out sequential operation of the airflow after the airflow change-over with much operating frequency as airflow at the time of new sequential operation in the case of the reuse of a heating cook stage, and a ventilating fan.

[Claim 4] For after the predetermined time progress after use termination of a heating cook stage, a control means is an interlocking device of a heating cooking device and a ventilating fan according to claim 3 which carries out sequential operation of the ventilating fan with the airflow which canceled the airflow at the time of the new sequential operation of a ventilating fan, and was chosen according to the busy condition of said heating cook stage.

[Claim 5] The interlocking device of the heating cooking device equipped with the control means which makes a hand floodlight turn on while carrying out sequential operation of a heating cook stage, the ventilating fan which performs ventilation at the time of cooking, and this ventilating fan to cooking of said heating cook stage and choosing the airflow of said ventilating fan according to the busy condition of a heating cook stage, and a ventilating-fan actuation means to perform putting out lights of the airflow change-over, a halt, and said hand floodlight of said ventilating fan, and a ventilating fan.

[Claim 6] It is the interlocking device of a heating cooking device and a ventilating fan according to claim 5 which was equipped with a heating force accommodation means to adjust the heating force

of a heating cook stage, and made the configuration which will switch off a hand floodlight if a control means carries out predetermined time progress after adjusting the heating force during the sequential operation of a ventilating fan.

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[Translation done.]

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the interlocking device of the heating cooking device which ventilates the exhaust gas which occurs when it carries out cooking, having used gas combustion or the electrical and electric equipment as the heat source, an odor, heat, etc. with the ventilating fan interlocked with cooking, and a ventilating fan.

[0002]

[Description of the Prior Art] As for the interlocking device of the conventional heating cooking device and a conventional ventilating fan, it was main to have forgotten and to have aimed at [ of operation of the ventilating fan of the order at the time of cooking and a halt ] prevention. Therefore, when the heating cooking device was used, the ventilating fan was what performs sequential operation, discharges to outdoor the lamp soot generated in fixed ventilation airflow at the time of cooking, an odor, heat, etc., and ventilates the room.

[0003]

[Problem(s) to be Solved by the Invention] However, in the above-mentioned conventional heating cooking device and the interlocking device of a ventilating fan, since the ventilation airflow of a ventilating fan was fixed, ventilation adapted to the actual condition according to the heating situation of a heating cooking device was not completed. That is, the lamp soot which increased when the use talkative of the heating moveable cooking stove in a heating cooking device was increased from one piece to two pieces and cooking was performed to coincidence, an odor, and heat could not fully be ventilated, or when the fixed ventilation airflow of a ventilating fan was too large, it ventilated beyond the need and had [ \*\*\*\* / lowering the temperature of the room too much ] technical problems, like an operation sound turns into noise.

[0004] moreover, since a ventilating fan can perform neither an airflow change-over nor a halt during a heating cooking device and sequential operation, it cannot do free usage which embraced the operating condition of a heating cooking device, but is inconvenience -- etc. -- it also had the technical problem.

[0005] This invention offers the interlocking device of the heating cooking device which solves the above-mentioned conventional technical problem and could be made to carry out sequential operation of the ventilating fan with a heating cooking device rationally according to the operating condition of a heating cooking device, and a ventilating fan.

[0006]

[Means for Solving the Problem] The ventilating fan which performs ventilation at a heating cook stage and the time of cooking in order that this invention may solve the above-mentioned conventional technical problem, The control means which is made to carry out sequential operation of this ventilating fan to cooking of said heating cook stage, and chooses the airflow of said ventilating fan according to the busy condition of a heating cook stage, When it has a ventilating-fan actuation means to perform the airflow change-over and halt under sequential operation of said

ventilating fan and said control means switches airflow during the sequential operation of a ventilating fan. It is the interlocking device of a heating cooking device and a ventilating fan made the configuration which carries out sequential operation of the airflow after said airflow change-over as airflow at the time of new sequential operation in the case of the reuse of a heating cook stage.

[0007] While according to the above-mentioned means being based on the actual condition of cooking, obtaining the ventilation airflow according to the busy condition of a heating cook stage and being able to perform suitable ventilation. The change-over and halt of the airflow of a ventilating fan at the time of sequential operation can also always be performed. A room temperature carries out height too much, or Change-over accommodation of airflow when you want to make the ventilation noise small etc. can be performed, sequential operation of the airflow of Ushiro who switched airflow during the sequential operation of a ventilating fan further is carried out as airflow at the time of new sequential operation, it becomes operation of the ventilating fan again based on the operating condition on the occasion of cooking, and user-friendliness improves.

[0008]

[Embodiment of the Invention] The interlocking device of the heating cooking device and ventilating fan of this invention according to claim 1. The control means which is made to carry out sequential operation of a heating cook stage, the ventilating fan which performs ventilation at the time of cooking, and this ventilating fan to cooking of said heating cook stage, and chooses the airflow of said ventilating fan according to the busy condition of a heating cook stage. It has a ventilating-fan actuation means to perform the airflow change-over and halt under sequential operation of said ventilating fan, and said control means is made the configuration which carries out sequential operation of the airflow after said airflow change-over as airflow at the time of new sequential operation in the case of the reuse of a heating cook stage when airflow is switched during the sequential operation of a ventilating fan.

[0009] By setting the airflow at the time of sequential operation as a little more than [ "weakness" or / "a little more than" ] in the above-mentioned operation gestalt based on the need [ of having been computed by the control means from the amount of heating for every combination of the busy condition of a heating cook stage, for example, the use talkative of a gas range, ] ventilation airflow. A ventilating fan is based on ventilation of a lot of lamp soot and the odors at the time of carrying out cooking of talkative [ two ] using coincidence, and heat to the actual condition of cooking as "weak" operation at the time of "a little more than" operation and one talkative cooking, and the room can be ventilated.

[0010] Moreover, on the other hand, with a ventilating-fan actuation means, the change-over and halt of "a little more than" and "weakness" at the time of sequential operation can be performed always, a room temperature is too high or change-over accommodation of ventilation airflow when you want to make it small can free the time of being too low, and the noise according to an operating environment.

[0011] Furthermore, in order to carry out sequential operation of the airflow of Ushiro who switched airflow during the sequential operation of a ventilating fan by the control means as airflow at the time of new sequential operation, it is made to operation of the ventilating fan again based on the operating condition on the occasion of cooking.

[0012] The interlocking device of the heating cooking device and ventilating fan of this invention according to claim 2 carries out sequential operation of the ventilating fan in the publication of claim 1 with the airflow as which the control means was solved and chose the airflow at the time of the new sequential operation of a ventilating fan according to the busy condition of said heating cook stage after the predetermined time progress after use termination of a heating cook stage.

[0013] While the same operation as the above-mentioned heating cooking device according to claim 1 and the interlocking device of a ventilating fan is acquired in the above-mentioned operation gestalt. Furthermore, less than the predetermined time after use termination of a heating cook stage is the airflow at the time of use last time by the control means. That is, after being able to operate a ventilating fan and carrying out predetermined time progress with the optimal airflow in the busy

condition by operating with the airflow at the time of new sequential operation, it is returning to the airflow defined beforehand, and a ventilating fan can be operated with the airflow of a standard setup without regards to the last busy condition.

[0014] The interlocking device of the heating cooking device and ventilating fan of this invention according to claim 3 The control means which is made to carry out sequential operation of a heating cook stage, the ventilating fan which performs ventilation at the time of cooking, and this ventilating fan to cooking of said heating cook stage, and chooses the airflow of said ventilating fan according to the busy condition of a heating cook stage, When it has a ventilating-fan actuation means to perform the airflow change-over and halt under sequential operation of said ventilating fan and said control means switches airflow during the sequential operation of a ventilating fan It is made the configuration which carries out sequential operation of the airflow after the airflow change-over with much operating frequency as airflow at the time of new sequential operation in the case of the reuse of a heating cook stage.

[0015] By setting the airflow at the time of sequential operation as a little more than [ "weakness" or / "a little more than" ] in the above-mentioned operation gestalt based on the need [ of having been computed by the control means from the amount of heating for every combination of the busy condition of a heating cook stage, for example, the use talkative of a gas range, ] ventilation airflow A ventilating fan is based on ventilation of a lot of lamp soot and the odors at the time of carrying out cooking of talkative [ two ] using coincidence, and heat to the actual condition of cooking as "weak" operation at the time of "a little more than" operation and one talkative cooking, and the room can be ventilated.

[0016] Moreover, on the other hand, with a ventilating-fan actuation means, the change-over and halt of "a little more than" and "weakness" at the time of sequential operation can be performed always, a room temperature carries out height too much, or change-over accommodation of ventilation airflow when you want to make it small can free the noise according to an operating environment.

[0017] Furthermore, when a control means performs an airflow change-over during the sequential operation of a ventilating fan, in order to carry out sequential operation of the airflow after the change-over with much operating frequency as airflow at the time of new sequential operation, it becomes the operation mode which a user often uses according to operating environments, such as a pattern of cooking, in the case of use of cooking again.

[0018] The interlocking device of the heating cooking device and ventilating fan of this invention according to claim 4 carries out sequential operation of the ventilating fan in the publication of claim 3 with the airflow as which the control means was solved and chose the airflow at the time of the new sequential operation of a ventilating fan according to the busy condition of said heating cook stage after the predetermined time progress after use termination of a heating cook stage.

[0019] In the above-mentioned operation gestalt, while the same operation as the above-mentioned heating cooking device according to claim 3 and the interlocking device of a ventilating fan is acquired, after going through the predetermined time after use termination of a heating cook stage by the control means further, a ventilating fan can be operated with the airflow of a standard setup without regards to the busy condition last by returning to the airflow defined beforehand.

[0020] The interlocking device of the heating cooking device and ventilating fan of this invention according to claim 5 is equipped with the control means which makes a hand floodlight turn on while carrying out sequential operation of a heating cook stage, the ventilating fan which performs ventilation at the time of cooking, and this ventilating fan to cooking of said heating cook stage and choosing the airflow of said ventilating fan according to the busy condition of a heating cook stage, and a ventilating-fan actuation means to perform putting out lights of the airflow change-over, a halt, and said hand floodlight of said ventilating fan.

[0021] While being able to choose the airflow of the ventilating fan which carries out sequential operation according to the busy condition of a heating cook stage by the control means, the hand floodlight of a ventilating fan is made to turn on automatically in the above-mentioned operation



gestalt. Moreover, a user can switch off a hand floodlight uniquely with ventilating-fan actuation means.

[0022] The interlocking device of the heating cooking device and ventilating fan of this invention according to claim 6 is equipped with a heating force accommodation means to adjust the heating force of a heating cook stage, in the publication of claim 5, and after a control means adjusts the heating force during the sequential operation of a ventilating fan, if it carries out predetermined time progress, it will be made the configuration which switches off a hand lighting lamp.

[0023] When hand lighting is unnecessary, a hand floodlight is made to switch off automatically with the boiling food of long duration etc. in the above-mentioned operation gestalt, when there is no accommodation of the heating force even if it carries out predetermined time progress after adjusting the heating force by the control means further while the same operation as the above-mentioned heating cooking device according to claim 5 and the interlocking device of a ventilating fan is acquired.

[0024]

[Example] It explains using drawing 1 per example of the interlocking device of the heating cooking device and ventilating fan of this invention - drawing 10 below.

[0025] (Example 1) For the important section perspective view showing the interlocking device in the condition that drawing 1 connected electrically the gas combustion cooking device and the ventilating fan in one example corresponding to invention of claim 1, the block diagram in which drawing 2 shows the control circuit of this interlocking device, and drawing 3, the outline flowchart which shows control of the sequential operation of this interlocking device, and drawing 9 are \*\*\*\*\* which shows the setting memory of the control means which has memorized the airflow at the time of the sequential operation according to the use talkative of the combustion cooking device in this interlocking device.

[0026] 1 is the heating cooking device which makes gas combustion a heat source as a heating cook stage, and has left moveable cooking stove 1a, right moveable cooking stove 1b, back moveable cooking stove 1c, and grill 1d of the interior. 2 is a ventilating fan, and it is arranged above the heating cooking device 1 in order to discharge and ventilate to outdoor the lamp soot generated when cooking is carried out with the heating cooking device 1, an odor, heat, a combustion gas, etc. 3 is a ventilating-fan linkage path cord, wired the interior of a wall and has connected electrically the control circuit 4 and ventilating fan 2 as a control means of the heating cooking device 1. 5 is an operating button for left moveable cooking stoves, 6 is an operating button for right moveable cooking stoves, 7 is an operating button for back moveable cooking stoves, and it both builds [ 8 is an operating button for grills, and ] in ventilating fan interlock switches 5a, 6a, 7a, and 8a as if the ignition and fire extinguishing whose each is each moveable cooking stovea [ 1 ]-1c and grill 1d are performed. And each moveable cooking stove [ which correspond if each of these operating buttons 5-8 operate it ] a [ 1 ]-1c, and grill 1d is lit, the ventilating fan interlock switches 5a, 6a, 7a, and 8a which correspond further recognize a fired state, and that signal is sent to the control circuit 4 within the body of the heating cooking device 1. Said control circuit 4 judges the received signal, transmits the output signal of sequential operation to a ventilating fan 2 by the ventilating-fan linkage path cord 3, and carries out sequential operation of the ventilating fan 2. And fire extinguishing of each moveable cooking stovea [ 1 ]-1c and grill 1d is performed by operating each operating buttons 5-8 like the above mentioned ignition. Said control circuit 4 consists of a microcomputer which has a control section, operation part, and the storage section. While having the table of the setting memory it is indicated to drawing 9 that can choose the ventilation airflow of said ventilating fan 2 according to the busy condition (talkative [ which it is using for heating of a moveable cooking stove ]) of the heating cooking device 1 in the storage section When airflow is switched during the sequential operation of a ventilating fan 2, it considers as the configuration which memorizes the airflow after said airflow change-over as airflow at the time of new sequential operation, and carries out sequential operation in the case of the reuse of the heating cooking device 1, and it constitutes so that the signal from the ventilating-fan actuation switch mentioned

further later may be judged preferentially. 9 is a ventilating-fan actuation switch as a ventilating-fan actuation means, is operated manually and performs operation and a halt of a ventilating fan 2, and a change-over of airflow.

[0027] In the above-mentioned configuration, control of the sequential operation of the ventilating fan 2 by the control circuit 4 is explained according to the flows of control of drawing 3. The check of talkative [ of the moveable cooking stove used ], a grill, and its combination is performed by S1 (S is expressed like a step, a call, and the following). In S2, the airflow at the time of operation linkage of a ventilating fan 2 is read from the setting memory shown in drawing 9 with the moveable cooking stove used and a grill. In S3, a ventilating fan 2 is operated according to an airflow setup read by S2. In S4, directions of the airflow change-over by the ventilating-fan actuation switch 9 are checked, if there are no directions of a change-over, it will progress to S6, and if there are directions of a change-over, it will progress to S5. And in S5, the airflow is memorized as airflow after an airflow change-over according to directions of an airflow change-over. Even after cooking is completed and this ends operation of a ventilating fan 2, it is continued and memorized, and it is read by S2 at the time of operation of the ventilating fan 2 at the time of carrying out cooking again.

[0028] For example, when right moveable cooking stove 1b of the heating cooking device 1 is used, after checking the moveable cooking stove used with right moveable cooking stove 1b by S1, by S2, the memory number 3 of drawing 9 is read and a ventilating fan 2 is operated with "weak" airflow S3. Directions of airflow modification by the ventilating-fan actuation switch 9 are checked by S4, if there are no directions, it will fly to S6, and if there are directions, it will move to processing of S5. In that case, if there are directions of "a little more than" airflow with the ventilating-fan actuation switch 9, by S5, "weakness" will be rewritten to "a little more than" airflow like the memory number 3 of drawing 9, and it will memorize as airflow at the time of new sequential operation. Next, it checks for no check under continuation of combustion, i.e., directions of fire extinguishing by the operating button 6 for right moveable cooking stoves, S6, if combustion is continued, return and when not continuing, it will shift to S1 S7, and the processing of fire extinguishing and a halt of a ventilating fan 2 by the operating button 6 for right moveable cooking stoves are performed.

[0029] Each moveable cooking stove [ which correspond by this example if a control circuit 4 carries out each actuation of each operating buttons 5-8 ] a [ 1 ]-1c, and grill 1d is lit as mentioned above. Furthermore, since it is considering as the configuration which judges the operating condition of the heating cooking device 1 by the signal from the corresponding ventilating fan interlock switches 5a, 6a, 7a, and 8a, and chooses and sets up the airflow at the time of the sequential operation of a ventilating fan 2, the room adapted to the actual condition of cooking can be ventilated. That is, by setting the interlocking airflow of a ventilating fan 2 as a little more than [ "weakness" or / "a little more than" ] according to the use talkative of a heating cooking device, it can be based on operation of "a a little more than", and cooking with the moveable cooking stove of one lot to the actual condition of cooking like operation of "weakness" at ventilation of a lot of smoke and odors, and heat in the case of cooking which used two or more moveable cooking stoves for coincidence, and the room can be ventilated appropriately.

[0030] Moreover, since the control circuit 4 is made the configuration which judges preferentially the signal from the ventilating-fan actuation switch 9, free usage which operation and a halt of a ventilating fan 2, and a change-over of airflow were attained regardless of the time of sequential operation and non-sequential operation, and responded to the operating environment can be done.

[0031] Furthermore, since it holds until four has directions of rewriting of the memory of the rewritten airflow next in a control circuit S5, the combination of the moveable cooking stove to be used and airflow is memorized, a ventilating fan 2 is operated with the airflow at the time of next moveable cooking stove use, and it has the facilities which can save the time and effort which changes airflow each time.

[0032] (Example 2) Drawing 4 is the outline flowchart of the interlocking device of a combustion cooking device and a ventilating fan in one example of invention corresponding to claim 2. A control circuit 4 and a part of examples 1 only differ, the control circuit as a control means gives the same

sign to the part which does the same configuration of those other than this, and the operation effectiveness, and this invention omits detailed explanation, and explains it centering on a different place with reference to drawing 2.

[0033] The control circuit 4 in this invention in the configuration of the control means 4 of an example 1 in addition, after going through the predetermined time after use termination of the heating cooking device 1 further What made airflow after said airflow change-over the airflow at the time of new sequential operation on the occasion of the reuse of the heating cooking device 1 at the time of switching airflow during the sequential operation of a ventilating fan 2 is canceled, and it considers as the configuration which carries out sequential operation of the ventilating fan 2 with the airflow chosen according to the busy condition of said heating cooking device 1.

[0034] In the above-mentioned configuration, control of the sequential operation of the ventilating fan 2 by the control circuit 4 is explained according to the flows of control of drawing 4. The flows of control from S1 to S7 are the same as that of an example 1, and by S7, if a halt of fire-extinguishing processing and the ventilating fan 2 of the moveable cooking stove in cooking by the operating button is performed, the timer which counts time amount progress will be started S8. At S9, in the processing which judges the time amount of said timer, if it goes through predetermined time, it will shift to S10. In S10, it is the processing rewritten to the airflow at the time of the sequential operation which cancels the airflow of the ventilating fan 2 at the time of the new sequential operation memorized by S5, and is shown in drawing 9. That is, the elapsed time after use termination of the heating cooking device 1 is counted with the timer started by S8, if 1 hour passes, it will judge that the service condition changed, and a ventilating fan 2 is operated with the airflow of the sequential operation beforehand defined according to the use talkative of a moveable cooking stove.

[0035] As mentioned above, in this example, if the time amount progress which is counted with a timer in addition to an operation of an example 1 is set up in about 1 hour after use termination of the heating cooking device 1, within daytime and each cooking time amount of night (generally about 1 hour), sequential operation of a ventilating fan 2 can be carried out with the airflow at the time of use last time at the time of a reuse, and it is convenient in the morning. Moreover, when the service condition of a moveable cooking stove changes after the fixed passage of time, a ventilating fan 2 can be operated with the required ventilation volume beforehand decided according to the use talkative of the heating cooking device 1, and reservation of suitable ventilation is attained.

[0036] (Example 3) Drawing 5 is the outline flowchart of the interlocking device of a combustion cooking device and a ventilating fan in one example of invention corresponding to claim 3. A control circuit 4 and a part of examples 1 only differ, the control circuit 4 as a control means gives the same sign to the part which does so the same configuration of those other than this, and the operation effectiveness, and this invention omits detailed explanation, and explains it centering on a different place with reference to drawing 2.

[0037] The control circuit 4 in this invention is constituted so that the signal from the ventilating-fan actuation switch 9 may be judged preferentially, while having the table of the setting memory it is indicated to drawing 10 that can choose the ventilation airflow of said ventilating fan 2 according to the busy condition (talkative [ which it is using for cooking of a moveable cooking stove ]) of the heating cooking device 1 like the control circuit 4 of an example 1 in the storage section. Furthermore, a control circuit 4 is made the configuration which carries out sequential operation of the airflow after the airflow change-over with much operating frequency as airflow at the time of new sequential operation in the case of the reuse of the heating cooking device 1 when airflow is switched during the sequential operation of a ventilating fan 2.

[0038] In the above-mentioned configuration, control of the sequential operation of the ventilating fan 2 by the control circuit 4 is explained according to the flows of control of drawing 5. The check of talkative [ of the moveable cooking stove used ], a grill, and its combination is performed by S1. In S2, the airflow at the time of the sequential operation of a ventilating fan 2 is read from the setting memory shown in drawing 10 with the moveable cooking stove used and a grill. In S3, a

ventilating fan 2 is operated according to an airflow setup read by S2.

[0039] In S4, directions of the airflow change-over by the ventilating-fan actuation switch 9 are checked, if there are no directions of a change-over, it will progress to S6, and if there are directions of a change-over, it will progress to S4a. And in S4a, directions of an airflow change-over are followed, the airflow is memorized as airflow after an airflow change-over to 1 of the hysteresis memory in the setting memory of drawing 10, and sequential operation of the ventilating fan 2 is carried out with the airflow at S4b. Next, it checks for no check under continuation of combustion, i.e., directions of fire extinguishing by each operating buttons 5-7, S6, and if combustion is continued, return and when not continuing, if the processing and decision of fire extinguishing by the operating button are made to S1, by S6a, a little more than [ of the hysteresis memory 1 of the setting memory in drawing 1010 / "a little more than" ] will be set as airflow at the time of new sequential operation to it, and will be memorized to it. And if the 2nd time has directions of the change-over to "weak" airflow with the ventilating-fan actuation switch 9 by S4 during use in right moveable cooking stove 1b, "weakness" will be memorized by 2 of the hysteresis memory in the setting memory in drawing 1010 by S4a. And at S4b, sequential operation of the ventilating fan 2 is carried out with "weak" airflow.

[0040] Next, by S4b, if under continuation of combustion is checked by S6, namely, it checks for no directions of fire extinguishing by the operating button 6 and processing of fire extinguishing by the operating button is judged, since "a little more than" and "weakness" are the same numbers in the hysteresis memory in the setting memory in drawing 1010, storage of "a a little more than" will be held as airflow at the time of new sequential operation. although considered as a large setup of airflow in this example in the case of the same number -- "a little more than" and "weakness" -- any setup is possible.

[0041] The flows of control described above whenever there were directions of an airflow change-over are repeated, airflow is accumulated and 3rd [ further ] henceforth is memorized by the hysteresis memory in the setting memory in drawing 10. The number of this hysteresis memory is set as arbitration within the limits of constraint of a storage element. When there is a count more than the number of the set-up memory, i.e., directions of a change-over of airflow, processing of eliminating from old storage is possible. In hysteresis memory, out of the airflow accumulated and memorized, airflow with much operating frequency is set up as airflow at the time of new sequential operation, and is memorized in S6a. In the example shown in the setting memory of drawing 10, after that, at the time of the 3rd use, "a little more than" airflow is memorized and "a little more than" airflow is set up as airflow at the time of new sequential operation.

[0042] As mentioned above, by this example, since the airflow after the airflow change-over with much operating frequency is adopted as airflow at the time of new sequential operation by S6a in the case of the reuse of the heating cooking device 1 when an airflow change-over is performed during the sequential operation of a ventilating fan 2 in addition to an operation of a part of control circuit 4 in an example 1, it can become the operation mode which a user often uses according to operating environments, such as a pattern of cooking, in the case of a reuse, and user-friendliness can be raised further.

[0043] (Example 4) Drawing 6 is the outline flowchart of the interlocking device of a combustion cooking device and a ventilating fan in one example of invention corresponding to claim 4. A control circuit 4 and a part of examples 3 only differ, the control circuit as a control means gives the same sign to the part which does so the same configuration of those other than this, and the operation effectiveness, and this invention omits detailed explanation, and explains it centering on a different place with reference to drawing 2.

[0044] The control circuit 4 in this invention is constituted so that the signal from the ventilating-fan actuation switch 9 may be judged preferentially, while having the table of the setting memory it is indicated to drawing 10 that can choose the ventilation airflow of said ventilating fan 2 according to the busy condition (talkative [ which it is using for cooking of a moveable cooking stove ]) of the heating cooking device 1 like the control circuit 4 of an example 3 in the storage section.

[0045] Furthermore, when airflow is switched during the sequential operation of a ventilating fan 2, a control means considers as the configuration which carries out sequential operation of the airflow after the airflow change-over with much operating frequency as airflow at the time of new sequential operation in the case of the reuse of the heating cooking device 1, and after going through the predetermined time after use termination of the heating cooking device 1. What made airflow after said airflow change-over the airflow at the time of new sequential operation on the occasion of the reuse of the heating cooking device 1 at the time of switching airflow during the sequential operation of a ventilating fan 2 is canceled, and a ventilating fan 2 is made the configuration which carries out sequential operation with the airflow chosen according to the busy condition of said heating cooking device 1.

[0046] In the above-mentioned configuration, control of the sequential operation of the ventilating fan 2 by the control circuit 4 is explained according to the flows of control of drawing 6. The flows of control to S1-S7 are the same as that of the flows of control in the example 3 shown in drawing 5.

[0047] And if fire-extinguishing processing of the moveable cooking stove in cooking by the operating button and a halt of a ventilating fan 2 are performed by S7, the timer which counts time amount progress will be started in S8. At S9, in the processing which judges the time amount of said timer, if it goes through predetermined time, it will shift to S10. In S10, it is the processing rewritten to the airflow at the time of the sequential operation which cancels the airflow of the ventilating fan 2 at the time of the new sequential operation memorized by S6a, and is shown in drawing 10. That is, the elapsed time after use termination of the heating cooking device 1 is counted with the timer started by S8, if 1 hour passes, it will judge that the service condition changed, and a ventilating fan 2 is operated with the airflow of the sequential operation beforehand defined according to the use talkative of a moveable cooking stove.

[0048] By this example, to an operation of the control circuit 4 in an example 3, as mentioned above in addition, when an airflow change-over is performed during the sequential operation of a ventilating fan 2. Since the airflow after the airflow change-over with much operating frequency is adopted as airflow at the time of new sequential operation by S6a in the case of the reuse of the heating cooking device 1 the predetermined within a time one after termination of cooking, i.e., the inside of the time amount which does not change a service condition, can become the operation mode which a user often uses according to operating environments, such as a pattern of cooking, in the case of a reuse, and it can raise user-friendliness further.

[0049] Moreover, when a service condition changes after going through the predetermined time after use termination of the heating cooking device 1 namely When airflow is switched during the sequential operation of a ventilating fan 2, in the case of the reuse of the heating cooking device 1, what made airflow after said airflow change-over the airflow at the time of new sequential operation can be canceled, sequential operation of the ventilating fan 2 can be carried out with the airflow beforehand chosen according to the busy condition of said heating cooking device 1, and suitable ventilation can be carried out.

[0050] (Example 5) Drawing 7 is the outline flowchart of the interlocking device of a combustion cooking device and a ventilating fan in one example of invention corresponding to claim 5. A control circuit 4 and a part of example 1 only differs from a ventilating-fan actuation switch, the control circuit as a control means gives the same sign to the part which does so the same configuration of those other than this, and the operation effectiveness, and this invention omits detailed explanation, and explains it centering on a different place with reference to drawing 2.

[0051] The control circuit 4 in this invention is constituted so that in addition to the configuration of the control circuit 4 of an example 1 the hand floodlight 10 shown in drawing 1 may be made to turn on, and fire-extinguishing processing of said heating cooking device 1 may be interlocked with and the hand floodlight 10 may be switched off after operation of the ventilating fan 2 interlocked with cooking of the heating cooking device 1. The ventilating-fan actuation switch 9 can also switch off the hand floodlight 10 further in addition to an airflow change-over and a halt of a ventilating fan 2.



[0052] In the above-mentioned configuration, control of the sequential operation of the ventilating fan 2 by the control circuit 4 is explained according to the flows of control of drawing 7. The check of talkative [ of the moveable cooking stove used ], a grill, and its combination is performed by S1. In S2, the airflow at the time of operation linkage of a ventilating fan 2 is read from the setting memory shown in drawing 9 with the moveable cooking stove used and a grill. In S3, sequential operation of the ventilating fan 2 is carried out to cooking of the heating cooking device 1 according to an airflow setup read by S2. And the hand floodlight 10 is made to turn on after the sequential operation of a ventilating fan 2 in S3a. In S4, directions of the airflow change-over by the ventilating-fan actuation switch 9 are checked, if there are no directions of a change-over, it will progress to S6, and if there are directions of a change-over, it will progress to S5. And in S5, the airflow is memorized as airflow after an airflow change-over according to directions of an airflow change-over. Even after cooking is completed and this ends operation of a ventilating fan 2, it is continued and memorized, and it is read by S2 at the time of operation of the ventilating fan 2 at the time of carrying out cooking again. It checks for no check under continuation of combustion, i.e., directions of fire extinguishing by each operating button for moveable cooking stoves, S6, if combustion is continued, return and when not continuing, it will shift to S1 to S7a, and processing of fire extinguishing by the operating button for moveable cooking stoves, halt of a ventilating fan 2, and putting out lights of the hand floodlight 10 are performed.

[0053] As mentioned above, in this example, since cooking is interlocked with by the control means and the hand floodlight 10 is also turned on as well as the sequential operation of a ventilating fan 2, a hand becomes bright, it is not only easy to carry out cooking, but the actuation of lighting and putting out lights by hand control becomes unnecessary, and user-friendliness can improve very much. Moreover, apart from control by the control circuit 4, putting out lights can also do the hand floodlight 10 with the ventilating-fan actuation switch 9, and user-friendliness becomes good.

[0054]

[Example 6] Drawing 8 is the outline flowchart of the interlocking device of a combustion cooking device and a ventilating fan in one example of invention corresponding to claim 6. A control circuit 4 and a part of examples 5 which the control circuit as a control means shows to drawing 7 only differ, and this invention gives the same sign to the part which does so the same configuration of those other than this, and the operation effectiveness, omits detailed explanation, and explains it centering on a different place with reference to drawing 2.

[0055] 11 is steam-generated \*\*\*\*\* which operates the quantity-of-gas-flow control means (not shown) established corresponding to each operating buttons 5-8 for moveable cooking stoves, as shown in drawing 1, and after it operates and lights each operating buttons 5-8 for moveable cooking stoves, it is \*\* of a quantity-of-gas-flow control means which controls the quantity of gas flow supplied to each moveable cooking stove according to the contents of cooking, and adjusts thermal power. Moreover, after the control circuit 4 as a control means adjusts thermal power during the sequential operation of a ventilating fan 2 in addition to the configuration of the control circuit 4 in an example 5, if it carries out predetermined time progress, it will be made the configuration which switches off a hand floodlight.

[0056] In the above-mentioned configuration, control of the sequential operation of the ventilating fan 2 by the control circuit 4 is explained according to the flows of control of drawing 8. A timer is started by S1a. The check of talkative [ of the moveable cooking stove used ], a grill, and its combination is performed by S1. In S2, the airflow at the time of the sequential operation of a ventilating fan 2 is read from the setting memory shown in drawing 9 with the moveable cooking stove used and a grill. In S3, sequential operation of the ventilating fan 2 is carried out to cooking of the heating cooking device 1 according to an airflow setup read by S2.

[0057] And the hand floodlight 10 is made to turn on after the sequential operation of a ventilating fan 2 in S3a. In S4, directions of the airflow change-over by the ventilating-fan actuation switch 9 are checked, if there are no directions of a change-over, it will progress to S5a, and if there are directions of a change-over, it will progress to S5. And in S5, the airflow is memorized as airflow

after an airflow change-over according to directions of an airflow change-over. Even after cooking is completed and this ends operation of a ventilating fan 2, it is continued and memorized, and it is read by S2 at the time of operation of the ventilating fan 2 at the time of carrying out cooking again.

[0058] It is confirmed whether there was any steam-generated accommodation by actuation of steam-generated \*\*\*\*\* 11 by S5a. If there is steam-generated accommodation, it will progress to S5b, the timer started by S1a is reset, and if there is no steam-generated accommodation, it will progress to S5c. At S5c, it judges whether it is the no in which 10 minutes of the count of a timer passed, and if it has passed, the hand floodlight 10 will be switched off by S5d. And if said 10 minutes have not passed, it progresses to S6.

[0059] It checks for no check under continuation of combustion, i.e., directions of fire extinguishing by each operating button for moveable cooking stoves, S6, if combustion is continued, return and when not continuing, it will shift to S1 to S7a, and processing of fire extinguishing by the operating button for moveable cooking stoves, halt of a ventilating fan 2, and putting out lights of the hand floodlight 10 are performed.

[0060] As mentioned above, in this example, since cooking is interlocked with by the control circuit 4 as a control means and the hand floodlight 10 is also turned on as well as the sequential operation of a ventilating fan 2, a hand becomes bright, it is not only easy to carry out cooking, but the actuation of lighting and putting out lights by hand control becomes unnecessary, and user-friendliness can improve very much.

[0061] Moreover, power-saving can be attained while being able to prolong the life of a floodlight 10, since the hand floodlight 10 can be switched off in the case of the boiling food which covers a long time and does not carry out steam-generated accommodation by always counting time amount progress with a timer, and judging the elapsed time of Ushiro who did steam-generated accommodation during heating of a heating cooking device and which is cooked with fixed thermal power for a long time.

[0062] In addition, although each above-mentioned example explained the interlocking device of the heating cooking device which makes gas combustion a heat source, and a ventilating fan, this invention can apply the electrical and electric equipment also to the ventilating-fan interlocking device in the heating cooking device made into the source of heating. And in the heating cooking device which has the electric heat-source section, the amount of energization of the electrical and electric equipment to the heat-source section is adjusted for the steam-generated accommodation in the above-mentioned example 6, and the heating force is adjusted.

[0063]

[Effect of the Invention] So that clearly from the above explanation the interlocking device of the heating cooking device and ventilating fan of this invention according to claim 1 The control means which is made to carry out sequential operation of a heating cook stage, the ventilating fan which performs ventilation at the time of cooking, and this ventilating fan to cooking of said heating cook stage, and chooses the airflow of said ventilating fan according to the busy condition of a heating cook stage, When it has a ventilating-fan actuation means to perform the airflow change-over and halt under sequential operation of said ventilating fan and said control means switches airflow during the sequential operation of a ventilating fan It is what made airflow after said airflow change-over the configuration which carries out sequential operation as airflow at the time of new sequential operation on the occasion of the reuse of a heating cook stage, and it can be based on the actual condition of the required ventilation volume which must be changed by the busy condition of a heating cook stage, i.e., cooking, and the room can be ventilated appropriately.

[0064] Moreover, the change-over and halt of the airflow of a ventilating fan at the time of sequential operation can also always be performed, a room temperature carries out height too much, or change-over accommodation of airflow when you want to make the ventilation noise small etc. can also perform free ventilation according to an operating environment.

[0065] Furthermore, in order to carry out sequential operation of the airflow of Ushiro who switched

airflow during the sequential operation of a ventilating fan as airflow at the time of new sequential operation, it becomes operation of the ventilating fan again based on the operating condition on the occasion of cooking, and user-friendliness can be improved.

[0066] The interlocking device of the heating cooking device and ventilating fan of this invention according to claim 2 It is what carries out sequential operation of the ventilating fan in the publication of claim 1 with the airflow as which the control means was solved and after the predetermined time progress after use termination of a heating cook stage chose the airflow at the time of the new sequential operation of a ventilating fan according to the busy condition of said heating cook stage. After the inside of the predetermined time after use termination of a heating cook stage becomes operation based on the operating condition on the occasion of a reuse, can improve user-friendliness and goes through the predetermined time after use termination of a heating cook stage further, it can operate a ventilating fan with the airflow beforehand decided according to the busy condition of a heating cook stage, and can perform suitable ventilation.

[0067] The interlocking device of the heating cooking device and ventilating fan of this invention according to claim 3 The control means which is made to carry out sequential operation of a heating cook stage, the ventilating fan which performs ventilation at the time of cooking, and this ventilating fan to cooking of said heating cook stage, and chooses the airflow of said ventilating fan according to the busy condition of a heating cook stage, When it has a ventilating-fan actuation means to perform the airflow change-over and halt under sequential operation of said ventilating fan and said control means switches airflow during the sequential operation of a ventilating fan It is what was made the configuration which carries out sequential operation of the airflow after the airflow change-over with much operating frequency as airflow at the time of new sequential operation in the case of the reuse of a heating cook stage. Since sequential operation of the airflow after the change-over with much operating frequency is carried out as airflow at the time of new sequential operation when an airflow change-over is performed during the sequential operation of a ventilating fan, it becomes the operation mode which a user often uses according to an operating environment in the case of cooking again, and user-friendliness can be received further.

[0068] Moreover, it can be based on the busy condition of a heating cook stage, i.e., the actual condition of cooking, and ventilation of the room can also be performed, the change-over and halt of the airflow of a ventilating fan at the time of sequential operation can also further always be performed, a room temperature carries out height too much, or change-over accommodation of airflow when you want to make the ventilation noise small etc. can also perform free ventilation according to an operating environment.

[0069] The interlocking device of the heating cooking device and ventilating fan of this invention according to claim 4 It is what carries out sequential operation of the ventilating fan in the publication of claim 3 with the airflow as which the control means was solved and after the predetermined time progress after use termination of a heating cook stage chose the airflow at the time of the new sequential operation of a ventilating fan according to the busy condition of said heating cook stage. The inside of the predetermined time after use termination of a heating cook stage becomes the operation mode which a user often uses according to an operating environment in the case of a reuse, and can improve user-friendliness. Furthermore, after going through the predetermined time after use termination of a heating cook stage, a ventilating fan can be operated with the airflow beforehand decided according to the busy condition of the heating cook stage without regards to the last busy condition, and suitable ventilation can be performed.

[0070] The interlocking device of the heating cooking device and ventilating fan of this invention according to claim 5 Sequential operation of a heating cook stage, the ventilating fan which performs ventilation at the time of cooking, and this ventilating fan is carried out to cooking of said heating cook stage. And it is the thing equipped with the control means which makes the hand floodlight of a ventilating fan turn on while choosing the airflow of said ventilating fan according to the busy condition of a heating cook stage, and a ventilating-fan actuation means to perform putting out lights of the airflow change-over, a halt, and said hand floodlight of said ventilating fan. While the

time and effort which turns on a hand floodlight can be saved at every of a heating cooking device and convenience increases to it, when lighting is unnecessary, putting out lights is also possible, proper use according to the operating environment of cooking can be performed, and it can do much more conveniently.

[0071] The interlocking device of the heating cooking device and ventilating fan of this invention according to claim 6 After it has a heating force accommodation means to adjust the heating force of a heating cook stage, in the publication of claim 5 and a control means adjusts the heating force during the sequential operation of a ventilating fan, it is what was made the configuration which will switch off a hand floodlight if predetermined time progress is carried out. Even if it carries out predetermined time progress, when there is no accommodation of the heating force, with prolonged boiling food etc., when hand lighting is unnecessary, a hand floodlight can be switched off automatically, and extension and power saving of the life of a hand floodlight can be planned.

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[Translation done.]

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**DESCRIPTION OF DRAWINGS**

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**[Brief Description of the Drawings]**

**[Drawing 1]** The perspective view showing the combustion cooking device equipped with the ventilating-fan interlocking device in the example 1 of this invention – an example 6, and a ventilating fan

**[Drawing 2]** The outline block diagram of the whole ventilating-fan interlocking device in this example 1 – an example 6

**[Drawing 3]** The flow chart which shows control of the sequential operation of the ventilating fan in this example 1

**[Drawing 4]** The flow chart which shows control of the sequential operation of the ventilating fan in this example 2

**[Drawing 5]** The flow chart which shows control of the sequential operation of the ventilating fan in this example 3

**[Drawing 6]** The flow chart which shows control of the sequential operation of the ventilating fan in this example 4

**[Drawing 7]** The flow chart which shows control of the sequential operation of the ventilating fan in this example 5

**[Drawing 8]** The flow chart which shows control of the sequential operation of the ventilating fan in this example 6

**[Drawing 9]** Drawing showing the table of the setting memory of the airflow at the time of the sequential operation according to the moveable cooking stove use talkative of the combustion cooking device equipped with the ventilating-fan interlocking device in this example 1

**[Drawing 10]** Drawing showing the table of the setting memory of the airflow at the time of the sequential operation according to the moveable cooking stove use talkative of the combustion cooking device equipped with the ventilating-fan interlocking device in this example 3

**[Description of Notations]**

1 Heating Cooking Device (Heating Cook Stage)

2 Ventilating Fan

4 Control Circuit (Control Means)

9 Ventilating-Fan Actuation Switch (Ventilating-Fan Actuation Means)

10 Hand Floodlight

11 Steam-generated \*\*\*\*\* (Heating Force Accommodation Means)

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